The Loneliness of the Interconnected

Charles Seife

> Most of us view the Internet as a useful tool that enriches our lives by expanding our access to information and new groups of people. Who hasn't marveled at the Internet's ability to put us instantly in touch with what's happening around the world, and who hasn't been impressed by its amazing "connectivity"? But as the author of this selection sees it, the Internet actually does the opposite. According to Charles Seife, instead of connecting us to others, the Internet isolates us in a bubble of our own making by directing us to ideas that reinforce our beliefs and people who reflect our own values and biases. Instead of exposing us to differences, the Internet actually encourages conformism and intolerance—and thus threatens basic principles that sustain a democratic society. Seife is a writer and journalist who specializes in issues related to mathematics and technology. He currently is a professor in the Arthur L. Carter Journalism Institute at New York University. His publications include *Zero: The Biography of a Dangerous Idea* (2000), which won the 2000 PEN/Martha Albrand Award for First Nonfiction, *Decoding the Universe: How the New Science of Information Is Explaining Everything in the Cosmos, from Our Brains to Black Holes* (2005), and *Virtual Unreality: The New Era of Digital Deception* (2014), the source of this selection.

> *I think it's a very firm part of human nature that if you surround yourself with like-minded people, you'll end up thinking more extreme versions of what you thought before.*
>
> — CASS SUNSTEIN

OPINIONS ARE STUBBORN THINGS. The firmest ones can weather for years a hailstorm of contrary facts, remaining nearly immutable in a flood of contrary evidence. Only slowly do they yield, eroded, bit by bit, by time as much as by the impositions of external reality.

The importance of a fact is measured not in absolute terms, but by judging it

against the opinions it challenges. In the field known as information theory, the bits and bytes of an incoming message contain information only if the content is, to some degree, unexpected. If you can predict, with perfect confidence, what's inside an envelope without needing to open it, there's nothing to be gained by opening the envelope. It's the very unpredictability of the message—the fact that the reader doesn't know exactly what the letter contains—that gives the message any informational value at all. Information is that which defies expectation.

Information is not the barrage of facts that's pelting us from every direction. Information consists of those facts and messages that, in some way, shape our ideas. Information is the force that causes the erosion of our mental landscape, that undermines and reconstructs our perceptions of the world. Anything that does not affect our opinions is not information; it's noise.

As we grow and learn, the fragile and unsupported parts of our mental landscape are washed away, and we are left with some opinions that are as firm as bedrock—and just as difficult to move. And once in a great while, there is such a storm of hard, inescapable fact that it challenges to topple even one of our bedrock beliefs, and this causes a mental crisis.

In the 1950s, psychologist Leon Festinger sought to understand what happens at the crisis moment—when an immovable object of a core belief comes into conflict with the irresistible force of an undeniable contrary fact. And he did it by making an inspired choice about whom to study: an apocalyptic cult.

Festinger decided that the ideal subjects to study would be the members of a small group of people led by a housewife in a Chicago suburb. This woman, Dorothy Martin, claimed to write letters under the direction of beings from the planet Clarion. These beings told her that early in the morning on December 21, 1955, there would be a tremendous cataclysm: Chicago would be destroyed, and much of the United States would be submerged in a great flood. But all was not lost: Martin learned from her spirit guide that as the clock tolled midnight in the last few hours before the disaster, a spaceman would knock on the door and lead Martin and her followers to a saucer that would whisk them to safety.

Festinger knew that for the cult's members, the belief in this disaster and salvation was incredibly deeply held. Many of the members of the cult had made large personal sacrifices because of their faith in Mrs. Martin's prophecy; one, a respected physician, had lost his job—and become a laughingstock—when he exposed his daft beliefs to the newspapers. The members of the cult were so sure of the coming day of reckoning that they were willing to isolate themselves, give away their worldly goods, and even tear apart their clothing (to remove metal

zippers and snaps that could injure them aboard the flying saucer) based upon their confidence in Mrs. Martin's writings. Only a deep, firm belief could inspire people to make such sacrifices. Yet when the spaceman failed to knock at the door, the cult members would be faced with the inescapable fact that the prophecy had been false. Here was a clear-cut case of immovable belief versus irresistible fact—and it would happen on a schedule.

For Festinger, this was a perfect case study that would help him understand what he termed "cognitive dissonance"—a situation in which a person is forced to believe two mutually incompatible ideas at the same time. In particular, it would allow him to test a somewhat counterintuitive hypothesis: that when the spaceman failed to show up, Mrs. Martin and some of her followers would become even more fervent in their beliefs. In other words, the inescapable fact that the prediction failed wouldn't merely fail to shake some of Mrs. Martin's followers from their faith—it would even strengthen their fervor.

Festinger's theory was based upon the assumption that cognitive dissonance is intensely uncomfortable for most humans. When confronted with such pain, we attempt to resolve the dissonance through whatever mechanisms we have at hand. And when the dissonance-causing-fact is as firm and unyielding as the continued existence of Chicago, there are only two basic approaches that one can take. First, a person can reshape the belief to accommodate the fact, or perhaps even discard the belief entirely. However, this would have been a very painful thing to do in this case, given how deeply held the belief was. The other alternative is to attempt to counter the weight of the oppressing fact by increasing one's conviction in the belief. Since this can't be done with facts, it's done with people. Specifically, Festinger argued that once Mrs. Martin's prophecy failed, some of the cult members would try to solve their cognitive dissonance by strengthening social bonds within the group and by attempting to gain more supporters. As Festinger puts it:

It is unlikely that one isolated believer could withstand the kind of disconfirming evidence we have specified. If, however, the believer is a member of a group of convinced persons who can support one another, we would expect the belief to be maintained and the believers to attempt to proselytize or to persuade nonmembers that the belief is correct.[1]

It happened, more or less, as Festinger thought it would. Mrs. Martin and many of the die-hard believers weren't put off by the disconfirmation. Instead, she softened the blow by revealing new alien messages that would help explain the

failed coming of the apocalypse. Even more telling, though, the group suddenly increased its attempts to proselytize—even to the point of issuing press releases to the media. The group would seek comfort by trying to increase its size.

The most potent weapon for fighting off uncomfortable facts is other people —a network of the faithful who are willing to believe with you. In the arms of fellow true believers, you can find solace from the brutal reality of disconfirmation.

This is just as true today as it was in the 1950s. We seek shelter from the harsh information that carves away our cherished beliefs by finding other people who share our convictions. Social ties reinforce our internal mental landscape so that it can better resist a blast of unwelcome facts. But now, with the advent of the digital age, our interconnectedness has increased almost without bound. We are able to communicate with peers all around the world as easily as—more easily than—visiting our next-door neighbor. With this tremendous interconnectedness comes the ability to build many more social ties, to weave a vaster web of personal bonds than ever before. And that means that the Internet gives us much more raw social material than ever before to help us bolster our shaky prejudices and beliefs.

In a very real way, the Internet is helping us preserve our mental landscape from the weathering effects of information. We are becoming ever more resistant to the effects of uncomfortable facts—and ever more capable of treating them as mere noise.

If you've ever been to London, there's a good chance you've visited the northeast edge of Hyde Park. It's a prime tourist attraction because, if you're interested in seeing the local wildlife, you can't do better than visiting Speakers' Corner on a gray Sunday afternoon. If you choose to go, you'll almost certainly be treated to a fine display: a dozen or so men (mostly) and a few women, perched on ladders and makeshift podiums, each bellowing out their complaints and exhortations to all passersby. There are Marxists on the left, apocalyptic Christians on the right, and all variety of true believers in between, haranguing the crowd—and one another—in hopes of winning a few converts. The best (or merely the most entertaining) among them can draw crowds of fifty or a hundred people or even more; even likelier is the chance to pick up a heckler or two who will fling verbal pies in hopes of catching a speaker square in the face.

Speakers' Corner is touted as a bastion of free speech—a place where Londoners and other Britons can come and air their grievances, no matter how

absurd. But it's not really the prospect of free speech that draws so many speakers to that particular corner of Hyde Park every Sunday afternoon. After all, the vast majority of speakers are able to speak freely about their beliefs in plenty of other places, both public and private, without getting hauled off to jail. What brings them to Hyde Park on Sunday is not free speech, but a free audience.

What's so valuable to the speakers is that the Sunday-afternoon ritual is likely to draw a thousand or more curious people, tourists and locals alike, all of whom mill about in hopes of finding something worth listening to for a few brief moments. It's an opportunity to speak in front of a receptive crowd of a respectable size—a size that few speakers are dynamic and interesting enough to draw on their own. It's a tremendous amount of work to build up an audience as an orator, and Speakers' Corner is a way to reach far more people than an amateur could get any other way.

An audience used to be a precious and rare commodity. Generally, one could get it only through unusual eloquence, through power, or through money. The politician and the preacher build and wield their strength by gathering large audiences and influencing their thought. Conversely, certain offices automatically confer upon the holder massive, world-spanning audiences. The entire world hangs upon what the president or the pope has to say; before their elections, Barack Obama and Jorge Bergoglio[2] had to struggle and shout to get significant numbers of people to pay attention—and they seldom had the opportunity to garner a large audience. Money, too, buys listeners; Michael Bloomberg and Rupert Murdoch, like William Randolph Hearst and Joseph Pulitzer [3] before them, realized that nothing's better for reaching people than owning a media empire.

What opportunities were there for the rest of us? Barring an accident of fate that brings us into the public eye—as a witness or a victim or a bit player in a drama—we had to be content with writing the occasional angry letter to the editor of our local paper or joining forces with a handful of like-minded people who felt strongly about an issue dear to us. Perhaps we might try to attract the attention of somebody with his own audience, like a congressperson or a reporter. We could speak as freely as we wanted, but it made little difference if nobody heard what we were saying.

Then came the Internet.

The audience problem had vanished. The Internet's vast interconnectivity made it possible for everyone to hear everyone else—and to be heard by

everyone else. This is perhaps the most important and radical change wrought by digital information. Every single person hooked up to the Web can instantly reach every other person. Your audience is potentially the world.

Twitter is an international Speakers' Corner writ larger than anyone had ever imagined. The speech isn't quite free, but the number of people listening is vast. You can say something and, in theory, hundreds of millions of people on all seven continents are able to hear you loud and clear—if you can convince them to tune in. As with Speakers' Corner, most orators on Twitter and in other corners of the Internet ramble and rave, sharing little of interest. But there are enough virtual passersby that if you have a little eloquence and a little skill, you can soon have your voice and even your image echoing around the globe. It's sometimes stunning to see how easy it can be to become an international celebrity, if only for a short time. Even against your will.

In 2002, Canadian high school student Ghyslain Raza videotaped himself swinging a large pole around himself as if it were a kung fu weapon. Somewhat portly and terribly uncoordinated, Raza cut a ridiculous figure—as many of us soon found out. For poor Raza left the videotape where some of his fellow classmates could find it, and they uploaded it to YouTube. It soon went viral; Ghyslain, dubbed "Star Wars Kid" for his very un-Jedi-like martial-arts skills, had become an international celebrity. Within a short time, hundreds of thousands of people had watched Raza's antics. As of 2013, the video had been viewed some twenty-eight million times.[4] (By way of comparison, I'll consider myself very, very lucky if this book is read by a few hundred thousand.) Upload a cute enough video of a cat playing a piano, or do something extraordinarily foolish like shoot yourself in the leg during a gun-safety class, or create something goofy enough to tickle people's fancy—dancing hamsters or dancing babies or dancing Gangnams[5]—and there's a chance you'll get a brief adrenaline burst of fame.

The point is not that you're guaranteed to be heard among the clatter and noise of the Internet; it's that, as small and insignificant as your voice might be, it is at least possible that your voice can be perceived—and amplified—to the point that you're heard by an international audience that would make any major broadcast network proud. The mob is always there, listening, waiting to hear something interesting, and even without the power of a president or the money of a Mort Zuckerman,[6] for a short time, at least, you can have a pulpit almost as bully as what they've got. This is free speech in the truest sense. It's not just the freedom to speak out about anything; it's also the ability to be heard by

everybody.

With the ability to be heard comes the ability to organize. The Internet has made it easier than ever to set up networks of like-minded people—to set up groups who have a belief or an interest in common, no matter how unusual or bizarre that interest or belief might be. Even the ideas on the very fringe of human thought—a notion that might be held by only one in a million people—might find a devoted network of several hundred or even a few thousand followers on the Internet.

For example, in 2008, the Centers for Disease Control launched an investigation into a new, horrific disease. Sufferers often feel a weird crawling or biting sensation underneath the skin, and rashes and sores soon appear. Many people afflicted with the disease report pulling thin, wormlike fibers from sores. Only a few years earlier had the ailment gotten a name: Morgellons disease.

The name Morgellons was coined by Mary Leitao,[7] a mother who was increasingly frustrated at dermatologists' inability to find out what was wrong with her young son, who kept developing strange sores that had threads poking out of them. Using a word from an old French medical article that seemed to describe a similar ailment, Leitao gave the disease a concrete name and created a foundation to attempt to find the cause of the mysterious ailment. And a Web site.

Once that Web site was established, it became a focal point for people who felt they had similar problems. The word spread quickly, and hundreds of people with similar symptoms began contacting the foundation, as well as other authorities who might be able to help, such as the Mayo Clinic and the Centers for Disease Control. By 2007—just three years after the first report of Morgellons—the CDC received about twelve hundred reports of Morgellons, triggering the inquiry.[8] This was quite remarkable, given that the disease doesn't really exist.

Morgellons appears to be a variant of a fairly well-known condition called "delusional parasitosis"—the false conviction that you've got bugs crawling under your skin. It's not uncommon in people who are taking cocaine or other drugs, and in those who have schizophrenia, and it can occasionally strike healthy (or healthy-seeming) people as well.

The CDC study was very gentle about dispelling the myth of Morgellons, saying only that it "shares a number of clinical and epidemiologic features"[9] with delusional parasitosis, but the message was clear enough: the disease was in the patients' minds. The fibers they found—which were analyzed by researchers

—were almost all skin fragments or cotton threads that likely came from clothing. There are no bugs or strange foreign-body-producing organisms under the skin. Nevertheless, the victims clearly suffer, even if the disease has no external cause.

Despite the findings of the study, many Morgellons sufferers are unshaken in their belief that there really is something going on underneath their skin— whether it's parasites or, as a number of Morgellons theorists believe, alien DNA or self-replicating nanobots dumped by government airplanes. The deeper you delve into the Internet literature on the subject, the stranger the ideas become. And looking into these ideas, it becomes clear that the Internet is not just the repository in which these odd beliefs are archived and transmitted—it's also the medium that gives these ideas life in the first place. The fringe beliefs are birthed and nourished by the social connections that the Internet makes possible. As two Canadian psychiatrists put it:

a belief is not considered delusional if it is accepted by other members of an individual's culture or subculture. Although this may be appropriate in the context of spiritual or religious beliefs, the scenario in which a widely held belief is accepted as plausible simply because many people ascribe to it requires a revised conceptualization in our current era. That is, Internet technology may facilitate the dissemination of bizarre beliefs on a much wider scale than ever before.[10]

Morgellons is an Internet disease. It is a delusion that likely would have died out naturally, but thanks to its rapid spread on the Internet, it took on a life of its own. Believers gathered around the banner of Morgellons, and the very size of that group convinced members that their collective delusion was, in fact, real. Soon there was a big community in which the bizarre belief—that there were unidentifiable little organisms crawling under your skin—was completely normal. The movement became strong enough that its members were able to compel the CDC to investigate their fictional disease.

It's not just Morgellons that has taken off in this way. A person's belief in any sort of fringe idea can gain strength—and become unshakable—thanks to social bonds with other true believers. Any idea, no matter how bizarre, can seem mainstream if you're able to find a handful of others who will believe along with you. And since we are all plugged in to the ultimate Speakers' Corner every hour of every day of every week, it's trivially easy to find a group of sympathetic souls. Those small groups are constantly forming and gathering strength, reinforcing the beliefs around which they're formed, no matter how

outlandish.

There are the plushies (people who like to have sex with stuffed animals) and the furries (people who like to have sex while wearing animal costumes) and the object-sexuals (people who form sexual attachments to inanimate objects). There are groups devoted to exposing shape-shifting reptilian humanoids living among us, to revealing that the U.S. government brought down the twin towers on September 11, and to arguing that the IRS has no right to collect income taxes. There are fan groups devoted to time travelers, perpetual-motion-machine builders, and crackpot theorists of all varieties. It's not that these kinds of groups came into being with the Internet; anyone who's met a follower of Lyndon LaRouche[11] or a UFO nut or a moon hoaxer knows that strange, fringe ideas can catch on even in the absence of an Internet. But before the digital Web made society so interconnected, it was much harder to encounter such ideas—and it took active effort to engage with the communities that had fringe theories. Now even the craziest ideas are usually but a few mouse clicks away from confirmation and reinforcement by a band of fellow travelers.

It used to be that the roughest edges of people's odd beliefs would erode and crumble through simple isolation, through a lack of reinforcement with social bonds. Now isolation is nigh impossible, and those odd beliefs are sharpened and exaggerated when they are brought into the open in the company of a cozy group of like-minded individuals. In other words, the Internet is amplifying our quirks and our odd ideas. Bit by bit, it is driving us toward extremism.

The trend is reflected in the media we consume. The fragmentation of the media, especially the broadcast media, began before digital information first came into our lives. It's been almost two generations since the day when three networks held captive Americans who wanted to watch television. After a slow start, cable TV took off in the 1980s, and no longer could CBS, NBC, and ABC control the majority of television programming in the United States. In 1980, roughly 90 percent of prime-time television watchers in the United States were tuned in to one of the Big Three networks.[12] By 2005 that number had dropped to 32 percent, and it has continued to decline ever since. There are more choices out there, so the audience is spread more thinly. For TV news alone, CNN, Fox News, and MSNBC and various other spinoffs and subsidiaries provide direct competition to the evening newscasts of the major networks.

Then, when the Internet came along, people could get their news—even news in video format—in innumerable new ways. It's not surprising that the Big

Three's evening news programs have lost 55 percent of their viewers in the past thirty years.13 The surprise is that they've managed to hold on to that other 45 percent.

Back when the Big Three ruled the airwaves, the nightly news had to perform a delicate balancing act. A news program had to try to appeal to the entire television audience—it had to be, quite literally, a broad cast—if it was to compete with the other two networks that were taking the same strategy. This meant that the networks couldn't become too partisan or take an extreme position on anything, for fear of alienating its potential audience. If roughly half of the country was Republican, you'd instantly alienate half your audience if your program began to seem like it was too tilted in favor of Democrats.

Then cable and the Internet increased our choices. The Big Three kept trying to capture as big a slice of America as possible by staying centrist, but a couple of upstarts—particularly Fox News and MSNBC—realized that there was another possible strategy. Instead of trying to go after the entire American population with a broadly targeted program that appealed to everyone, you could go with a narrowly targeted program that appealed to only a subgroup of the population. Throw in your lot with, say, die-hard Republicans and give them coverage that makes them happy; you'll alienate Democrats and won't get them as viewers, but you can more than make up for that loss by gaining a devoted Republican fan base. This is exactly what Fox News did. Few liberals would tune in to watch Bill O'Reilly14 except out of grim amusement at how crazy the other side has become, but it's a program that makes the far right happy. MSNBC did exactly the reverse; by filling its schedule with shows that appeal to liberals, such as Keith Olbermann's15 show, it made a play for the leftist Democrats to the exclusion of the more centrist and right-leaning folks. These networks have given up on broadcasting; instead they're narrowcasting.

The more choices a consumer has on his TV, the more thinly spread the audience will be for each TV show, just because there's more competition. The more thinly spread the audience, the more it makes sense to drop the pretense of trying to appeal to everybody and to instead attempt to corner the market on one chunk of the population; and as choices increase and audiences dwindle, the proportion of the population it makes economic sense to go after becomes smaller. In this light, MSNBC and Fox make perfect sense; they are the natural consequence of the ever-increasing competition to get our attention. Narrowcasting is gradually beating out broadcasting, and the casts will get narrower and narrower as the audience becomes harder and harder to find. In

effect, as audience becomes more narrowly defined, the viewer is getting more power about what kind of news and data are served up and what kind of news and data are ignored.

The Internet is allowing narrowcasting on a scale never before dreamed of. When you go to CNN.com or BBC.com or PBS.org, the Web site is tracking which stories you read and which ones you don't. And they're using that information to make the Web site more appealing to you—you personally. Google News looks at your reading patterns and chooses to present you with news items that are likely to appeal to you based upon your location, your past reading choices, even your Web history. It's not just Google News, in fact. Google itself—the Web search engine—uses your search history and your past behavior to try to guess what kinds of links you're most likely to find useful. You might not even be conscious of it, but your online behavior is dictating what news you're exposed to, what data you're being served. In a very real sense, you are controlling which elements of the outside world you see and which you don't.

This is welcome news in many ways. We all have limited time to read, watch, or listen to the news, and we can't waste our entire day searching for information on the Internet. The better the media outlets and search engines are at giving us the news we want, the more efficiently we can use our time. But at the same time, there's a very big downside. We tend to shy away from data that challenges our assumptions, that erodes our preconceptions. Getting rid of our wrong ideas is a painful and difficult process, yet it's that very process that makes data truly useful. A fact becomes information when it challenges our assumptions. These challenges are the raw material that forces our ideas to evolve, our tastes to change, our minds to grow.

The more power we have over the data that comes in, the better able we are to shelter ourselves from uncomfortable truths—from facts that challenge our preconceptions and misperceptions. If you have a steady diet of items from Fox News and *The Drudge Report*, your belief that Barack Obama is not a U.S. citizen will be perfectly safe. If you believe that vaccines cause autism, frequenting *The Huffington Post* and MSNBC will likely strengthen your conviction rather than weaken it. With news and data that is tailored to our prejudices, we deprive ourselves of true information. We wind up wallowing in our own false ideas, reflected back at us by the media. The news is ceasing to be a window unto the world; it is becoming a mirror that allows us to gaze only upon our own beliefs.[16]

Couple this dynamic with the microsociety-building power of the hyper-interconnected Internet and you've got two major forces that are radicalizing us. Not only does the media fail to challenge our preconceptions—instead reinforcing them as media outlets try to cater to smaller audiences—but we all are able to find small groups of people who share and fortify the beliefs we have, no matter how quirky or outright wrong they might be. Ironically, all this interconnection is isolating us. We are all becoming solipsists, trapped in worlds of our own creation.

Solipsism wouldn't be so bad but for the fact that the worlds we're creating around ourselves are not just fictions of the mind but have real, concrete consequences for other people who don't share the same delusions.

A bad idea, a wrong piece of information, a digital brain-altering virus can spread at the speed of light through the Internet and quickly find a home among a dispersed but digitally interconnected group of true believers. This group acts as a reservoir for the bad idea, allowing it to gather strength and reinfect people; as the group grows, the belief, no matter how crazy, becomes more and more solidly established among the faithful.

Morgellons is a relatively benign example; other than the believers themselves, the only people inconvenienced are physicians and insurers. Not so with real diseases. Since the late 1980s, Peter Duesberg, a biologist at Berkeley, has been arguing that AIDS is not caused by a virus, but instead is the product of using recreational drugs—or of taking the anti-HIV drugs that are used to keep the virus in check. It was a dubious belief even at the time Duesberg proposed it, and it quickly failed several tests in the early 1990s and was soundly rejected by the scientific community.[17] Duesberg was pretty much banished from the better—and more widely read—scientific journals after that. In the days before the Internet, that would have almost guaranteed that he would fade into obscurity; forced to the fringe, Duesberg would rant and rave in fourth-tier journals and be ignored by the rest of the world. But by the mid-1990s the Web had come along, so Duesberg took to the Internet and quickly found a large audience. Several HIV-denialist groups coalesced on the Web, touting Duesberg's research as evidence that AIDS wasn't caused by a virus.

On October 28, 1999, Thabo Mbeki, then the president of South Africa, gave a controversial speech about AZT, the first anti-HIV drug. "Many in our country have called on the government to make the drug AZT available in our public health system,"[18] he said, but warned that "the toxicity of this drug is such that it

is in fact a danger to health." It was astonishing that the president of South Africa would try to keep an anti-HIV drug out of his country, especially given that his country was ground zero for the epidemic. The incidence of HIV was skyrocketing—almost 13 percent of the population was infected by 1997[19]—and the country was crying out for drugs that might help. AZT was in wide use to prevent pregnant mothers from transmitting the virus to children. Why was Mbeki so convinced that AZT would do more harm than good? He didn't go into detail, but he hinted at where he had gotten his information: online. "To understand this matter better," he said, "I would urge the honorable members of the National Council to access the huge volume of literature on this matter available on the Internet."[20]

Physicians and AIDS researchers in South Africa—and around the world—were shocked. The South African newspaper the *Sunday Independent* described the reaction:

Mark Lurie, a Medical Research Council senior scientist based in Mtubatuba in KwaZulu-Natal, was "flabbergasted" by Mbeki's speech.

"Here is a drug that cuts the rate of mother-to-child transmission by 50 percent. If the president is telling us that this drug doesn't work, where is his evidence for such a statement?"

Mbeki's evidence seems to be the Internet, according to Tasneem Carrim, a media liaison officer for the presidency.

"The president got a thick set of documents. He went into many sites, including the World Health Organisation's one. The president goes into the Net all the time," she said.[21]

It soon became clear what sites Mbeki was visiting. The South African president had stumbled upon HIV-denialist Web sites and was soon consulting with them, and with Duesberg (whom Mbeki invited to South Africa). Mbeki was soon a true believer. He publicly questioned whether HIV caused AIDS, and engaged in political maneuvers to prevent the distribution of anti-HIV drugs—even ones donated for free. (Eventually the courts had to intervene to allow unfettered access to the lifesaving drugs.) The minister of health earned the scorn of the scientific world by extolling the virtues of beetroot, lemon, and garlic as better ways to prevent AIDS than the antiretroviral drugs her ministry was denying the sick and dying. A 2008 study in the *Journal of Acquired Immune Deficiency Syndromes* estimated that more than 300,000 people lost their lives between 2000 and 2005 because of Mbeki's obstinate refusal to allow

his citizens to begin taking antiretroviral drugs.22

Of course, volumes and volumes of HIV-denial literature are still just a Google search away.

Three hundred thousand deaths might be the most extreme consequence of a Google search gone wrong. However, history is littered with examples of fringe beliefs—ones that the vast majority of people rejected—killing thousands upon thousands. For one, millions of people starved in the Soviet Union in part because Joseph Stalin23 embraced the wacky anti-Darwinist ideas of Trofim Lysenko,24 a man who believed that you could "train" crops to grow in the wrong seasons.

But comparing the Duesberg case with Lysenko's reveals just how much more potent fringe ideas become when they're digitized. Lysenko rose to power in part because he was of peasant stock, like his powerful benefactor, Stalin. And it was the fear of Stalin that allowed his ideas to grow and take hold. Scientists couldn't silence Lysenko; indeed, Lysenko silenced (and murdered) accomplished scientists who dared to say that Lysenkoism was nonsense. It's the opposite of what happened to Duesberg, who was shunted to the fringe and silenced by the scientific community. Had Duesberg lived in the time of Lysenko, his ideas would never have circulated around the United States, much less affected a government halfway around the world several years after he was discredited at home.

Yet because of the digital revolution, the has-been professor who was a laughingstock of his home country's scientific community was able to have a Lysenko-like influence without the backing of a Joseph Stalin. And Duesberg's ideas will last much longer than Lysenko's. Lysenkoism essentially died with Stalin. However, even if the HIV-denialist movement dies in South Africa, Duesberg's ideas will remain visible to everyone for years and years to come, ready to spark a new outbreak.

Because of the interconnectedness of the digital world and the transmissibility of even large volumes of work, the most absurd fringe idea can reach far beyond the fevered mind of its creator. Even the craziest notions can be heard and amplified and transmitted by virtual communities. The extremes of human thought are gathering strength.

As we sink into the comfortable monotony of constant reinforcement, as we spend an increasing amount of time listening to sources of information that are tailored to strengthen our mental fictions rather than challenge them, we are slowly being turned into cranks ourselves. And those who don't succumb are

often at the mercy of those who do.

Engaging the Text

1. Seife defines information as "that which defies expectation" (para. 2). How often do you encounter facts or ideas that "undermine and reconstruct" your understanding of the world? When, for example, was the last time you recall encountering a fact or an idea that forced you to reexamine your beliefs? Why, according to Seife, do most of us prefer "noise" to genuine information?

2. How, in Seife's view, does the Internet foster the development and dissemination of "fringe beliefs" (para. 29) like those associated with Morgellons disease (para. 24) even in the face of contradictory evidence? What do you consider examples of odd or fringe beliefs that you've encountered online, and why do you think people often find such ideas interesting or attractive?

3. What costs and benefits does Seife associate with the kind of "narrowcasting" that the Internet has made possible? Why does narrowcasting threaten to "radicalize" Internet users? What examples of radicalization or radical thinking have you encountered during your own explorations of the Internet? How dangerous do they seem to you, and why?

4. To what extent would you agree with Seife's claim that the Internet is turning all of us into "solipsists, trapped in worlds of our own creation" (para. 41)? Why might widespread solipsism pose a threat in a democracy?

5. **Thinking Rhetorically** Seife concludes his examination of Internet isolation by warning that "because of the interconnectedness of the digital world" the "extremes of human thought are gathering strength" (para. 52). However, he doesn't offer any solutions to the looming crisis he identifies. How would you describe his purpose in writing this selection? Why do you think he chose to address the problem of Internet extremism without trying to resolve it?

Exploring Connections

6. How might Malcolm X's experience of learning to read (p. 161) be seen as supporting or challenging Seife's definition of information? In your view,

does Malcolm X represent an example of critical thinking or solipsistic belief? Why?

7. How does Seife's exploration of online extremism challenge the optimistic portrayal of technology's influence on global relations offered by Eric Schmidt and Jared Cohen (p. 219)? As a class, discuss whether you think communication technologies like television and the Internet have enhanced our understanding of other peoples and cultures or exacerbated global tensions.

8. Drawing on the ideas of Seife and Sherry Turkle (p. 236), write a journal entry or a short essay discussing the impact of the Internet and social media on the development of independent critical thinking skills among today's teens.

Extending the Critical Context

9. Working in groups, design and conduct a survey to identify the main sources of news that the students at your college consult regularly. Compare your results in class and discuss whether your research confirms or complicates Seife's claim that the news has become more of a "mirror" that reflects our own values than a "window" on the world. (para. 40).

10. Go online to sample a few Web sites associated with Internet extremism, like those linked with pro-ana groups that encourage anorexic girls to lose weight or those of white supremacist organizations like Stormwatch or Occidental Dissent. Debate in class whether such sites represent a real public danger in a democracy. What can or should be done to limit their influence?